MINUTES
OF THE
UPPER MISSISSIPPI RIVER SYSTEM FLOW FREQUENCY STUDY
TASK FORCE MEETING
29 JUNE 2000 – ST. LOUIS, MISSOURI

The meeting began at 8:00 a.m. with welcoming remarks, introductions, and a discussion of the schedule by the Chairman, Mr. S. K. Nanda (Rock Island District, Corps of Engineers). Mr. Rich Astrack (St. Louis District, Corps of Engineers) served as host and discussed logistics of the meeting. A complete list of the speakers is provided in the transcript, which is available on request from the Rock Island District, Corps of Engineers. These minutes highlight principal speakers and issues addressed.

Mr. George Gitter reported that the original study completion date was September 2001, but was approved to be changed to March 2002. Currently it is felt that a change to December 2002 is required due to a delay in obtaining required digital mapping. However, this proposed change in completion date is not yet approved.

Dr. David Goldman from the Corps of Engineers' Hydrologic Engineering Center provided a summary of the essentially final selected methodology for developing the required frequency relationships. He emphasized that Technical Advisory Group (TAG) and Interagency Advisory Group (IAG) recommended that historic information, data prior to the 1900's, not be used. Using mixed analysis was discussed as a valid methodology for the Kansas City gage. Developing regional skew values was also explained. Smoothing effects generally were described as minor in impacting flow values, but valuable in maintaining consistent values reach to reach. The principal remaining work on the hydrology has to do with completing the Illinois River, which may be affected by backwater. The TAG and IAG recommended that instead of traditional flow frequency analysis, a stage frequency curve using coincident frequency analysis should be considered. Additional work also remains on the Mississippi and Missouri Rivers below St. Charles and Alton to St. Louis. This reach is complicated by high Missouri River flows that can cross the Missouri and Mississippi delta and flow directly into the Mississippi River.

Mr. John Burant from the Rock Island District then made a presentation giving a general overview of the hydraulic modeling effort and its status. The effort is in the early stages and no conclusions or anticipated outcomes are available. It was mentioned that due to contractor data delivery problems some modeling efforts are significantly behind schedule.

Dr. David Goldman continued the modeling discussion by describing in general terms the process of developing stage profiles for the Upper Mississippi based on the unsteady flow modeling techniques discussed by Mr. Burant. The process includes combining the flow frequency curve for unregulated conditions with a curve that depicts the regulated and unregulated relationship. The regulated flow versus probability curve is obtained from

this process for each point location or station along the river. Next, a rating curve for each point is developed using UNET. The stage frequency at each point or river station, or the profile for a given probability flow, can then be obtained from the station rating curves and the regulated frequency curves. HEC has been contracted to develop software to accomplish most of this process automatically as well as address the uncertainty aspects of the process. Relating only peak flows and peak stages avoids the problems of looped rating curves.

Next, Mr. Earl Eiker from Headquarters Corps of Engineers spoke about the necessity to evaluate risk and uncertainty in the study. He also described four alternative methodologies to evaluate the possible failure of levees. The assumptions regarding levee failure have not yet been finalized. However, it was made clear that risk and uncertainty will be a part of this study.

Mr. S. K. Nanda mentioned that the inundation mapping aspect has been removed from the study and will be accomplished later under agreements with FEMA. Also, as a separate effort, a process to efficiently accomplish the mapping is being developed by CRREL. He then introduced Mr. Tim Pangburn from the Corps of Engineers' Cold Regions Research and Engineering Laboratory (CRREL) who described a 6-step process to go directly from the computed water surface profiles to mapping the inundated areas. His presentation was in terms of coordinating the hydraulic model with the GIS.

Following Mr. Pangburn's presentation, the meeting broke for lunch; upon reconvening Mr. Rolf Olsen, Corps of Engineers' Water Resources Support Center (WRC), provided an update on the investigation of impacts of climate variability and land use changes on flow frequency. He demonstrated some clear trends in temperature and rainfall. However, though most forecasts agree that temperature will probably continue to increase in our study area, the amount and impacts are not certain. He clearly identified impacts of land use on runoff and showed that major changes in land use occurred prior to 1900. This supports the decision to not include in the flow frequency analysis the flow records prior to 1900. In general, there is a great deal of uncertainty in the prediction and use of trends in both climate and land use.

Mr. Dennis Hamilton (Rock Island District, Corps of Engineers) and Mr. Bill Blanton (FEMA, Washington, DC) provided a brief update to the Task Force regarding using the results of the flow frequency study to update FEMA flood insurance rate maps (FIRMs). Work is in progress to develop a Memorandum of Understanding (MOU) between the Corps of Engineers and FEMA to accomplish the FIRM updates. Once the MOU is agreed to, there will be an effort to obtain funding, probably in FY02. The Task Force at this time feels that updated FIRMs are required to meet the needs of the States and that floodways should be computed using HEC-RAS. During discussion following the presentation, Mr. Matt Miller (FEMA) indicated that his opinion was that the MOU needs to be completed by the end of this summer. And in response to another question, Mr. Hamilton indicated that a list of the member agencies on the Flood Insurance Rate Map Task Force would be attached to this meeting summary.

Mr. Paul Soyke (Rock Island District, Corps of Engineers) next summarized the Citizens' Public Involvement Group meeting that had occurred the preceding day. Various concerns and issues mentioned included: 1) a need for a continuing authority to carry on the work started by this study, 2) the Citizens' Public Involvement Group is developing a format for the public meetings, 3) checking data for levee heights, 4) location and funding for the public meetings, 5) assumption for levee failure or overtopping elevations, and 6) response to letters from the Missouri Drainage & Levee District and from the Upper Mississippi, Illinois and Missouri Rivers Association (UMIMRA).

Then a discussion of assumed levee heights for failure took place. Mr. Eicker indicated that flood fighting and no overtopping was not considered appropriate by the Corps of Engineers. Mr. Miller agreed and stated that FEMA encourages communities and States to plan for future conditions. Mr. Vonnahme from Illinois gave a site specific example indicating that flood fighting and non-overtopping is not an appropriate assumption. Mr. Lawlor from Kansas stated that State permits control levee heights and non-overtopping was not a fair assumption. In general, all the States indicated nonsupport for an assumption that the levees would never be overtopped.

Summary comments and appreciation for support provided by the various attendees were then made by Mr. Eiker, followed by Corps of Engineers, Mississippi Valley Division comments by Mr. Joe McCormick who commented on the fine work being accomplished in this very complicated study.

Each of the Federal Agency representatives present then provided their comments. Dr. Bill Kirby (USGS) indicated support for use of the Bulletin 17 approach and using data pertaining to years after 1900 only. He also mentioned a new initiative for expanded Federal flow data collection. Mr. Ken Bullard (BOR) supported all the study conclusions to date. He also mentioned a recent similar study on the Colorado River which indicated a reduction in the 100-year discharge. Mr. Miller (FEMA) indicated support for the study and the importance of getting the MOU with FEMA completed. He indicated some attention needs to be given to dealing with the FEMA appeals process. Mr. Albert Schulz (FEMA-7) noted that the States need to work together on floodways.

The POCs, PMs, and representatives from the various Corps Districts and the Corps of Engineers Hydrologic Engineering Center were given a chance to comment and all expressed enthusiasm for the study. Mr. Tim Pangburn (CRREL) indicated that he looks forward to future involvement with this study.

The representatives of the various States involved then made brief comments. Mr. Don Vonnahme (IL-DNR) appreciated use of coincident probability regarding the confluence of the Illinois and Mississippi and offered State survey crews for verification of Digital Terrain Model (DTM) data. He emphasized the need for real time use of the tools and offered to lobby Congress or testify in support of the study. He also indicated that in his opinion there was no "war" between the States related to having differing encroachments for floodway calculations. Mr. Brian Dunnigan (NE-NRC) and Mr. Dennis Lawlor (KS-Dept of Ag) expressed appreciation to be a part of the study. Mr. George Riedel (MO-

EMA) also expressed appreciation and mentioned the importance of getting the MOU signed and that there are no boarder wars that he is aware of related to floodway determinations. Mr. Ogbazghi Sium (MN-DNR) stated that he had learned a lot from the meeting and that the State would fully support the study. Mr. Charlie DuCharme (MO-DNR) expressed appreciation for the contributions of everyone involved in the study.

Ms. Holly Stoerker (UMRBA) mentioned the February time frame to support legislation and funding needs. She feels much support could be generated and conveyed to Congress by connecting to the Upper Mississippi River Caucus and Congressional Task Force. Budgets for both FEMA and the Corps may cause double tracking but could be done, though it was implied that FEMA funding support should be initiated soon.

Mr. S. K. Nanda invited comments from anyone else at which time Mr. Bill Lay (Citizens' Public Involvement Group) expressed his appreciation for everyone's efforts and his opportunity to attend. Mr. Nanda then pointed out that the Public Involvement Group needed answers for the questions discussed previously and encouraged the drainage districts to check DTM data and encouraged the States to develop a joint view of how to determine the floodway and address the levee assumptions. Then Mr. Nanda thanked the St. Louis District for serving as host and Sandra Ragsdale for serving as recorder, and adjourned the meeting.